

A.2.7 SWMU 7

Description

SWMU 7 was identified based on the indicated presence of TEL burials on the Refinery Leaded Burial Map. SWMU 7 consists of two suspected 20-foot by 20-foot TEL sludge burials located southeast of Tank Basin 306 in the North Field and is depicted on Figure A.2.5.

As summarized on Table A.2.5, 19 borings, 14 soil samples and five water samples have been used to characterize this SWMU. Relevant data from the 2nd-Phase OWSS Investigation (NF6) and the NF6 LNAPL Area are also shown on Table A.2.5 for delineation purposes.

A total of 13 borings were installed during the 1st-Phase RFI, (SB0035, SB0036, U007001, U007002, U007004 through U007006, U007008, and U007011 through U007015). One sample (fill material) from SB0035 was collected and analyzed for Skinner's List VOCs and SVOCs, lead and TEL and one sample (fill material) from SB0036 was collected and analyzed for Skinner's List VOCs, SVOCs and metals, and TEL.

During the Full RFI, 12 soil samples were collected from six borings to further characterize this SWMU. Of these, three samples were analyzed for TCL VOCs and SVOCs, and TAL metals; and nine samples were analyzed for lead and TOL. One sample was analyzed for SPLP metals, one sample was analyzed for SPLP lead, and two samples were analyzed for physical characteristics.¹

Soils

As depicted on Figure A.2.5, SWMU 7 is partially underlain by LNAPL Area NF6. Stained soils within the fill unit were observed throughout SWMU 7 in all but one of the borings.

The following table summarizes the number of samples where soil delineation criteria were exceeded within SWMU 7:

¹ Physical characteristics specified in Appendix A, Task IV of Module III of the HWSA Permit included saturated and unsaturated permeability tests, moisture content, relative permeability, bulk density, porosity, soil sorptive capacity, CEC, TOC, pH, Eh and grain size distribution).

Constituents of Concern	Surface Soils (0 to 2 ft) (3 Samples)	Fill Material (>2 ft) (8 Samples)	Native Soils (3 Samples)	Totals (14 Samples)
VOCs	0/1	0/3	0/1	0/5
Benzo(a)pyrene	0/1	1/3	0/1	1/5
Other SVOCs	0/1	1/3	0/1	1/5
Lead	0/2	4/6	0/2	4/10
Other TAL Metals ^a	1/1	1/2	0/1	2/4
TOL/TEL	0/2	3/7	0/2	3/11

^aTotals do not include naturally-occurring metal compounds in excess of the delineation criteria (Al, Ca, Fe, Mg, Mn, K and Na).

Surface Soils (0 to 2 feet bgs)

Staining and/or elevated headspace readings were not observed within the surface soils, although catalyst beads were detected in the surface soil at several of the borings at SWMU 7. The only exceedances of soil delineation criteria observed within surficial soils were for copper (698 mg/kg), nickel (340 mg/kg) and vanadium (2,610 mg/kg) from S0808A3, which was collected from the boring for MW-127, located northeast of SWMU 7. No other constituents were detected above the soil delineation criteria in the other two surface soil samples.

Fill Materials (>2 feet bgs)

The lithologic descriptions on the boring logs indicate evidence of petroleum-related impacts (e.g., staining, odors, PID readings greater than 100 ppm, etc.) in the fill material at almost every boring location. As noted, and further discussed in Section 7, SWMU 7 is partly underlain by the NF6 LNAPL Area. Catalyst beads were also observed in all borings except for U007013. The thickness of the fill layer ranges from approximately five feet (S0808/MW-127) to 12 ft (U007013) in the vicinity of SWMU 7.

As shown on the table above, benzo(a)pyrene (2.6 mg/kg) and several other SVOCs were detected in one of the fill unit soil samples (SB0035SE) from SWMU 7. TEL/TOL was detected above the soil delineation criteria in three of the soil samples. Copper, lead, nickel, vanadium and zinc were detected above the applicable soil delineation criteria in the two to four foot bgs sample from S0808/MW-127. However, the SPLP sample collected from this same location (S0808B1) contained no metals above the applicable SPLP criteria. Therefore, the soils are not a source of metal impacts to groundwater.

Native Material

A clay/peat layer underlies the fill material in this part of the Refinery. No VOCs, SVOCs, TOL/TEL or other metals (with the exception of naturally-occurring iron at S0808E1) were detected above the applicable soil delineation criteria within the native soil at SWMU 7. Therefore, the site-related impacts are delineated vertically.

As discussed further in Section 6 of the RFI Report, lateral delineation of selected COCs has been completed on a site-wide basis for each Yard. The delineation of these COCs is depicted graphically on the figures provided in Section 6.

Groundwater

Groundwater underlying part of SWMU 7 has been impacted by LNAPL Area NF6, as discussed in Section 8 of the RFI Report. Several metals, including arsenic, lead and nickel, were also detected above the delineation criteria in many of the 1st-Phase groundwater samples. These samples were collected using either traditional hydropunch methodology or porous media, and based on a comparison of samples collected with porous media to samples collected using low flow techniques from nearby monitoring wells, SVOC and metals data are not considered to be representative of ambient groundwater conditions. For example, arsenic (14.5 µg/L), lead (466 µg/L) and vanadium (101 µg/L) were detected above the applicable groundwater criteria in the sample collected with porous media from H0442, but they were not detected above the applicable groundwater delineation criteria in the low-flow sample collected in November 2002 from the adjacent monitoring well (MW-127).

No COCs were detected above the applicable groundwater delineation criteria in a recent groundwater sample collected from MW-127 (down gradient of SWMU 7 and LNAPL Area NF6). Given that lead was not detected in the groundwater sample from this well, it does not appear that this confirmed TEL site is impacting groundwater. Further discussion of groundwater impacts can be found in Section 8 of the RFI Report.

Summary

This SWMU is a confirmed TEL burial area that is partly underlain by LNAPL Area NF6. Several COCs, including benzo(a)pyrene, lead and TOL are present in soils at concentrations above their respective soil delineation criteria at SWMU 7. The impacts are found almost entirely within the fill layer, which also exhibits widespread evidence of stained soils. Impacted soils from the fill unit within SWMU 7 have been delineated vertically and will be included in the CMS for further evaluation.

It does not appear that SWMU 7 is impacting groundwater, based on the absence of lead in the groundwater sample from MW-127, which is located immediately down gradient of this SWMU.